PA 16
12-64

THE PORT OF NEW YORK AUTHORITY

Sept. 20, 1967

To: Malcolm P. Levy

From: R. M. MONTI (Ext. 7918 — Room 300)

cc: Mr. H. Tessler

Attached brochure was given to me and J. Solomon, by U.S. Mineral Products Co., during inspection of spray tests on 9-13-67, arranged by U.S. Mineral Products and Mario and DiBono.

U.S. Mineral Products will send a sample spec to Joe Solomon of their Mark II asbestos cement overspray for possible use in elevator shafts. The Mark II samples appeared to have a well sealed surface, which would prevent dusting.

/ln
Att.

R.M.M.

EXHIBIT
Verhalen-16
9-10-96

PLAINTIFF'S EXHIBIT
PX-199

USM since 1875

UNITED STATES MINERAL PRODUCTS COMPANY

General Office and Plant
STANHOPE, NEW JERSEY 07874

Tel. 347-1200 Area Code 201
Cable: CAFCOINSUL, New York

USM

PRESENTS

CAFCO BLAZE-SHIELD Type "D"

for

Fireproofing of the WORLD TRADE CENTER

1. Extensive background in ULI testing, field performance and customer satisfaction.

2. Production facilities capable of meeting any and all job requirements, distinct service advantages due to plant location relative to job site.

3. Proven rugged application of a product possessing physical properties mandatory for smooth, efficient, rapid installation.

   (a) One coat application.

   (b) Excellent bond strength.

   (c) Inhibits corrosion of steel.

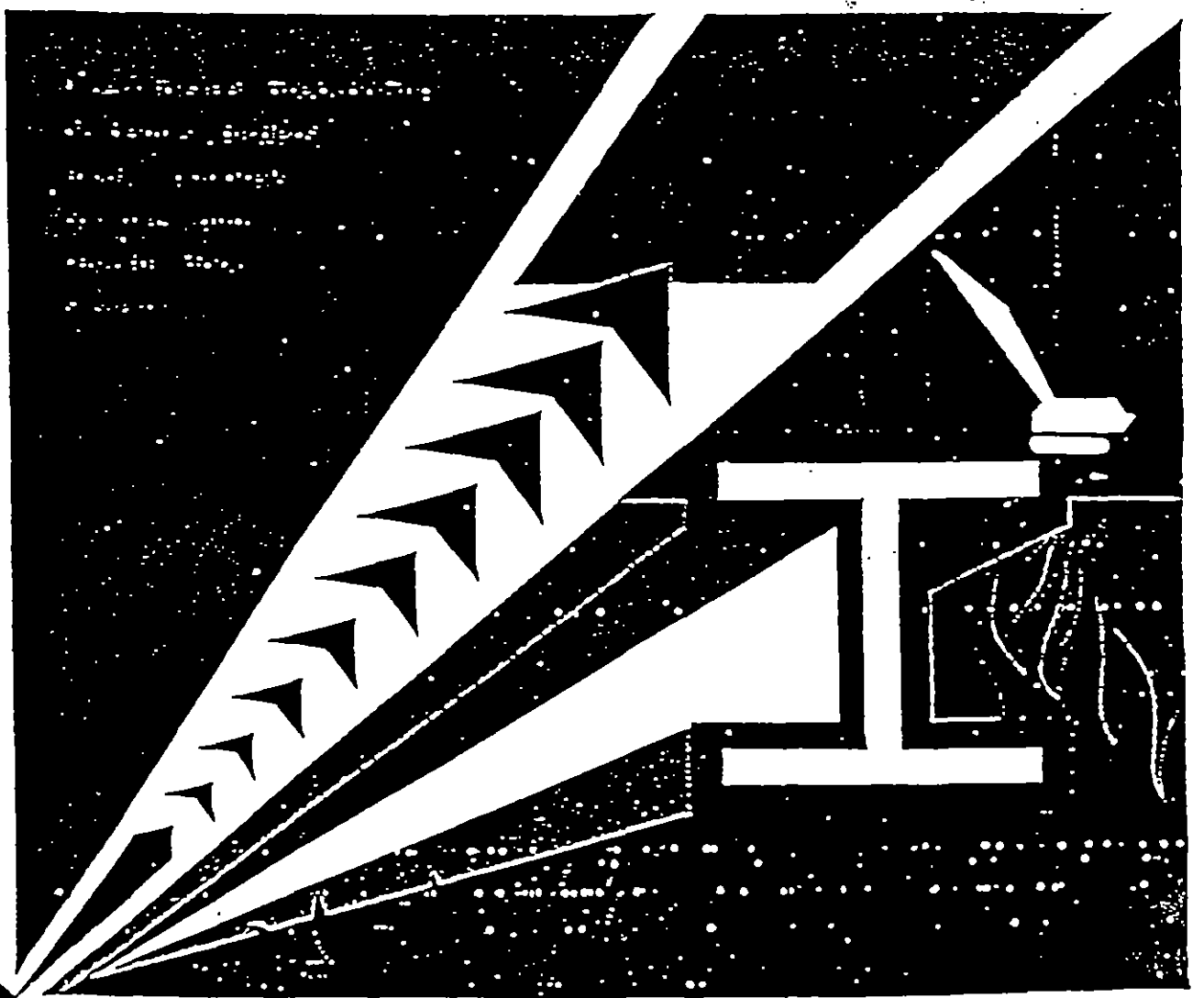
   (d) Highly resistant to dusting and flaking.

   (e) Can be applied under more severe weather conditions and withstand greater exposure without adverse effect.

Cafco®

1966-67 **BLAZE-SHIELD®**

fireproofing



USM

UNITED STATES MINERAL PRODUCTS COMPANY
Stanhope, New Jersey 07874

AIA FILE 21-C-1

BLAZE-SHIELD
fireproofing TYPE D

CA LAZE-SHIELD Type D offers a new concept in machine app ireproofing. A unique formulation of virgin asbestos fib hly refined white mineral fiber and proprietary binders, BLA IELD Type D provides optimum economy and improved job application by eliminating bonding adhesive, sealer and tamping. Further, scaffolding may be eliminated in those instances where job layout permits application directly from the floor.

Truly a one-coat application, BLAZE-SHIELD Type D can be built up to any required thickness in one pass and provides a durable finished surface which will not dust or flake. Detailed independent laboratory test information is available on request.

Tested and listed by Underwriters' Laboratories, Inc. (U.L.), for structural fireproofing applications, a large scale testing program has incorporated trench headers and header ducts to provide complete design flexibility.

Machine applied directly to structural steel beams, girders and columns and to metal floor or roof systems, BLAZE-SHIELD Type D utilizes conventional CAFCO application equipment. Thoroughly job-tested, BLAZE-SHIELD Type D offers these additional features:

ACOUSTICAL ABSORPTION — Application of fiber to deck and beams serves as a sound absorbent above open perforated hung ceiling systems; pads are eliminated; room-to-room sound transmission is reduced. Refer to Sound Absorption Coefficient Table, page 4.

ALL-WEATHER APPLICATION — With simple job precautions, application is possible under most temperature conditions. Curtain wall erection may be preceded by fireproofing work; job schedules are maintained; occupancy dates are met; job heating costs are reduced.

REDUCTION IN DEAD LOAD — BLAZE-SHIELD Type D weighs imately 1.25 pounds per board foot. Lighter than many eight" fireproofing materials, it often permits savings in ng and foundation costs.

PE NCE OF PROTECTION — Under normal structural move- me framing, floor or roof sections, BLAZE-SHIELD Type D ma high bond strength without surface cracking or spalling. Shrinkage cracks, resulting in limited effective fire retardancy, are eliminated.

SCOPE — This section shall include all materials, equipment and labor necessary for the application of fireproofing materials in accordance with terms and conditions of the contract documents.

PRODUCT QUALIFICATIONS — The manufacturer of the material shall have the approval for the applications specified. Such approvals are to include those of the pertinent municipal building authorities and insurance rating boards. The manufacturer shall provide laboratory test data to these authorities for approval.

CONTRACTOR'S QUALIFICATIONS — The contractor shall be licensed for this type of work by the manufacturer of the fireproofing materials. He shall use materials and application equipment approved by this manufacturer. Work shall be executed in strict accordance with the manufacturer's specifications and instructions.

MATERIALS

BONDING ADHESIVE — None required.

FIREPROOFING — The fiber shall be a factory quality controlled and formulated mix consisting of 100% inorganic virgin Crysotile asbestos fiber and small pellet, white mineral fiber, combined with proprietary binders. Fibers shall be CAFCO BLAZE-SHIELD Type D as manufactured by United States Mineral Products Company (Canadian subsidiary—Columbia Acoustics & Fireproofing Company (Canada) Ltd.), or approved equal, and shall be supplied to the job site in sealed paper bags, properly marked and labeled to show the inspection of Underwriters' Laboratories, Inc. or Underwriters' Laboratories of Canada for the application specified.

TRANSPARENT OVERSPRAY — None required.

WORK OF OTHER SECTIONS

EXAMINATION OF EXISTING WORK — The contractor shall examine all work prepared by others which is to receive the work of this section and report in writing to the general contractor all conditions not acceptable for application of fireproofing. Commencement of work constitutes acceptance of the surfaces prepared by others.

UTILITIES — Adequate ventilation, heat, light, electric power and water shall be provided by others.

PREPARATION FOR WORK OF THIS SECTION — All clips, hangers, clamps, supports, sleeves and other attachments to the base surfaces, as covered by other sections of these specifications, are to be placed by other contractors prior to commencement of work by this section.

INSTALLATION

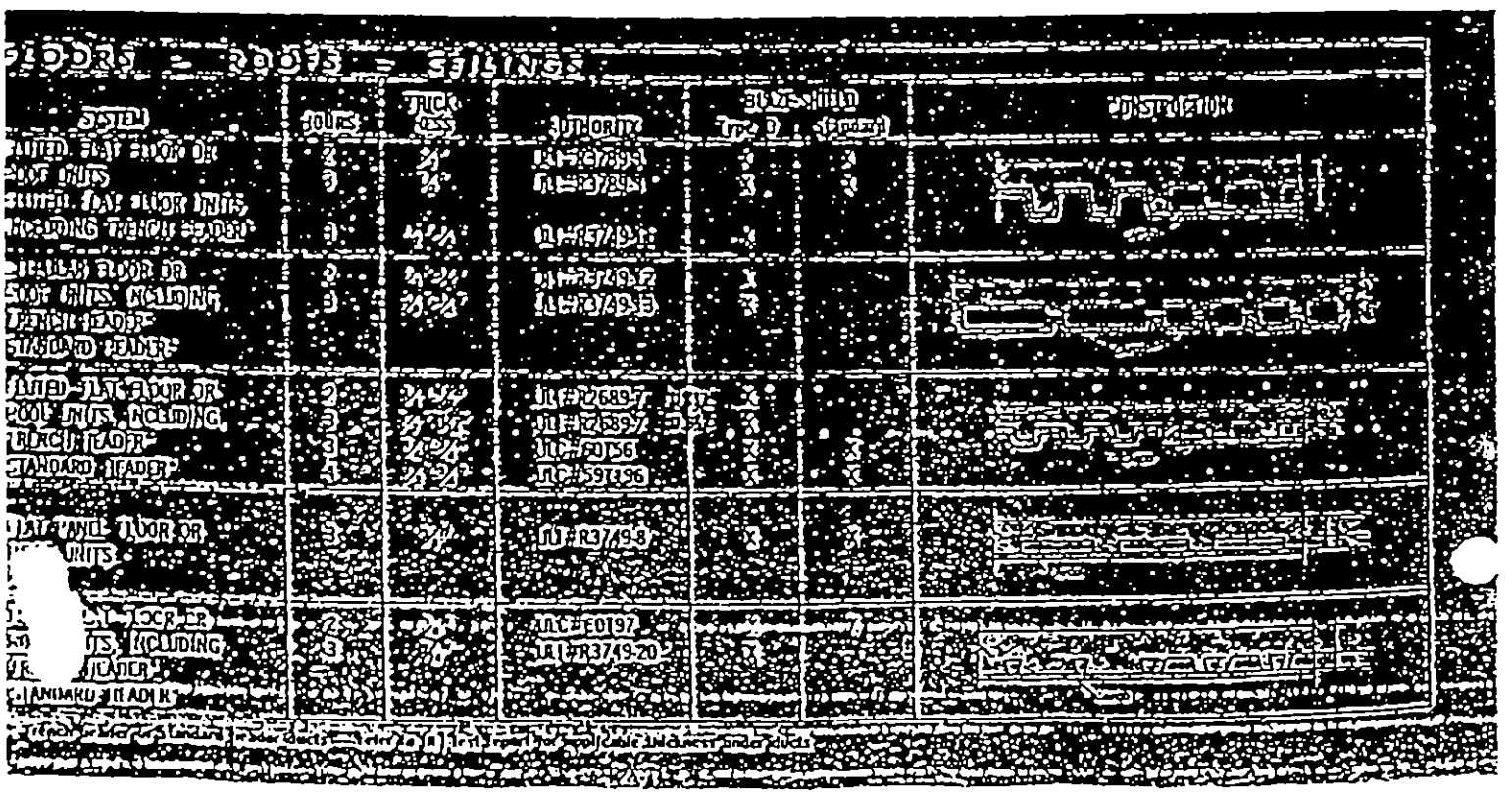
JOB CONDITIONS — Applications shall be started only after the contractor is satisfied surface and weather conditions are acceptable. Surfaces shall be reasonably clean and free of dirt, grease, oil, loose plaster, rust scale, loose paint or other conditions which would tend to prevent good adhesion. Freezing weather applications shall follow the manufacturer's recommendations.

APPLICATION EQUIPMENT — Fibers shall be applied with manufacturer-approved equipment.

PROCEDURE — Fibers shall be applied to the required thickness without tamping.

CLEANING — After completion of work, the contractor shall sweep clean all adjoining walls and floors upon which fiber has been deposited.

TABLE OF FIRE RETARDANT RATINGS — BLAZE SHIELD TYPE D AND BLAZE-SHIELD STANDARD



CAFCO BLAZE-SHIELD fireproofing STANDARD

O BLAZE-SHIELD STANDARD is a mill quality control blend rgin asbestos fiber, highly refined white mineral fiber and p 'ary binders. Tested and listed by Underwriters' Labora- t Inc. (ULI) and Underwriters' Laboratories of Canada (ULC) fo eproofing applications, code acceptance has been registered by major municipal building departments throughout the United States and Canada and in many countries overseas.

PRODUCT FEATURES

DUST FREE APPLICATION — An improved BLAZE-SHIELD STANDARD formulation eliminates application dustiness generally associated with conventional sprayed fiber products. Respiratory hazards, clean-up time and expenses are minimized.

JOB TESTED INTEGRITY — BLAZE-SHIELD STANDARD out-performed other fireproofing media when exposed to severe fire temperatures on major high-rise structures. CAFCO applications have been credited with restricting fire spread and preventing serious damage.

CORROSION PREVENTION — As tested in accordance with ASTM E-117 and Federal Specification MIL-E-5272A, CAFCO protected shop painted steel evidenced no corrosion under severe exposure conditions. Rust preventive properties are superior to the combination of shop and field painting; costly field painting may be eliminated. [illegible]

THERMAL INSULATION — CAFCO treated spandrels, roof decks and floor units reduce heating and air conditioning costs; rigid insulation at roof set backs may be eliminated. BLAZE-SHIELD STANDARD provides a thermal conductivity (k) value of .127.

ATHER APPLICATION:
RT ION IN DEAD LOAD
PL ENCE OF PROTECTION
ACOUSTICAL ABSORPTION

BLAZE-SHIELD STANDARD

GENERAL

SCOPE — See BLAZE-SHIELD Type O specification

PRODUCT QUALIFICATIONS — See BLAZE-SHIELD Type O specification

CONTRACTOR'S QUALIFICATIONS — See BLAZE-SHIELD Type O specification

MATERIALS

BONDING ADHESIVE — Bonding adhesive, where required, shall be a milky white, latex-type water emulsion which shall be unaffected by water, water vapor, condensation, aging or freezing once it has set. Shall be CAFCO ADHESIVE as supplied by the United States Mineral Products Company (Canadian subsidiary—Columbia Acoustics & Fireproofing Co. (Canada) Ltd.), or approved equal.

FIREPROOFING FIBER — The fiber shall be a factory quality controlled and formulated mix consisting of 100% inorganic virgin Crysolite asbestos fiber and small pellet, white mineral fiber, combined with 100% inorganic binders. Fibers shall be CAFCO BLAZE-SHIELD STANDARD as manufactured by United States Mineral Products Company (Canadian subsidiary—Columbia Acoustics & Fireproofing Company (Canada) Ltd.), or approved equal, and shall be supplied to the job site in sealed bags, properly marked and labeled to show the inspection of Underwriters' Laboratories, Inc. or Underwriters' Laboratories of Canada for the application specified.

TRANSPARENT OVERSPRAY — Overspray, where required, shall be transparent and unaffected by moisture; shall be CAFCO SEALER as supplied by United States Mineral Products Company (Canadian subsidiary—Columbia Acoustics & Fireproofing Company (Canada) Ltd.), or approved equal.

WORK OF OTHER SECTIONS

EXAMINATION OF EXISTING WORK — See BLAZE-SHIELD Type O specification

UTILITIES — See BLAZE-SHIELD Type O specification

PREPARATION FOR WORK OF THIS SECTION — See BLAZE-SHIELD Type O specification

INSTALLATION

JOB CONDITIONS — See BLAZE-SHIELD Type O specification

APPLICATION EQUIPMENT — See BLAZE-SHIELD Type O specification

PROCEDURE — All surfaces to be treated shall be primed with CAFCO ADHESIVE. Fibers shall be applied and tamped to required thickness and oversprayed, where required, with CAFCO SEALER.

CLEANING — See BLAZE-SHIELD Type O specification

SYSTEM	HOURS	THICKNESS	AUTHORITY	BLAZE-SHIELD Type O	BLAZE-SHIELD Standard	CONSTRUCTION
BEAMS, GIRDERS, SPANDRELS						
BEAMS, GIRDERS, SPANDRELS	2	½"	ULI #R3749-6		X	
	3	¾"	ULI #R3749-7		X	
	4	1"	ULI #R3749-13 W205	X		
WRAPPED BEAMS, GIRDERS, SPANDRELS, JOISTS	2	¾"	ULI #R3749-18	X		
	4	1"	ULC #60T97	X	X	
COLUMNS						
COLUMNS AND COLUMN CAPS	3	1¼"	ULI #R3749-10† W207	X		
	4	1¾"	ULI #R3749-9† W207	X		
	2	1¼"	ULI #R3749-19 W818	X	X	
	3	1¾"	ULI #R3749-19 W818	X	X	
	4	2¾"	ULI #R3749-19 W801	X	X	
WALLS						
WALLS	4	4"	ULI #R3749-21	X		

† Application to columns 14WF228 or greater

ULC — Underwriters' Laboratories of Canada / ULI — Underwriters' Laboratories, Inc.

All tests conducted in accordance with ASTM E-119

BLAZE-SHIELD Type H

Providing a harder, denser application, BLAZE-SHIELD Type H is formulated to provide an aesthetic, fissured, travertine-type finish for exposed applications where finished appearance and damage resistance are of prime importance. Equally suited [illegible] or vaulted ceilings, hyperbolic paraboloids, thin-shell barrel roofs, or other [illegible] or roof configurations, BLAZE-SHIELD Type H provides an incombustible [illegible] finish which provides excellent sound absorption and sound attenuation [illegible]. The inorganic fibers and binders are rot-proof, vermin-proof and are [illegible] by water or water vapor upon setting. The monolithic coating absorbs [illegible] structural movement without surface cracking or spalling.

SOUND ABSORPTION

Product & Thickness	Base	Coefficients 125	250	500	1000	2000	4000	NRC
3/4" BLAZE-SHIELD STANDARD	Metal Lath	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3/4" BLAZE-SHIELD STANDARD	Solid	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3/4" BLAZE-SHIELD TYPE D	Deck-Beams	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3/4" BLAZE-SHIELD STANDARD and 3/4" BLAZE-SHIELD TYPE H	Solid	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3/4" BLAZE-SHIELD TYPE H	Metal Lath	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3/4" BLAZE-SHIELD TYPE H	Solid	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Tests conducted in accordance with ASTM-C-423-60T by Overhauls Acoustical Laboratories, [illegible], Illinois, [illegible]

[illegible]

	Metal Compactory	[illegible]
BLAZE-SHIELD STANDARD	[illegible]	[illegible]
BLAZE-SHIELD TYPE D	[illegible]	[illegible]
BLAZE-SHIELD TYPE H	[illegible]	[illegible]

[illegible]

Application of a 3/4" thickness of CAFCO BLAZE-SHIELD to the underside of conventional metal roof deck construction qualifies the roof assembly as "Acceptable Class I Construction" under classifications established by the Associated Factory Mutual Fire Insurance Companies.

Class II combustible metal deck assemblies may be converted to Class I construction through application of CAFCO BLAZE-SHIELD to existing roofs.

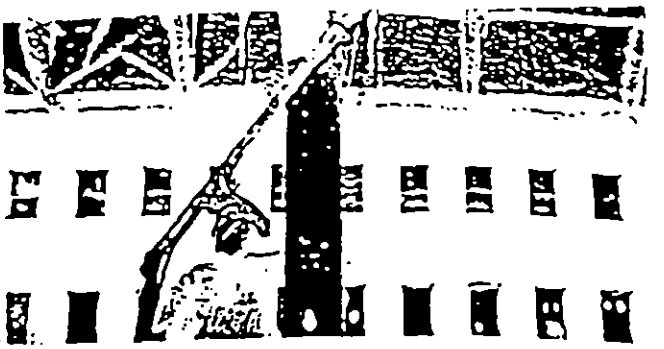
Contact local Factory Mutual Insurance Company representatives or writers for additional details.

OTHER CAFCO PRODUCTS

CAFCO HEAT-SHIELD — Provides a direct-applied continuous incombustible insulating blanket with a thermal conductivity [illegible] value of 0.25 at 75° [illegible] for thermal insulation of pre-engineered metal buildings and other applications. Write for complete product information.

CAFCO POWER-SHIELD — A mill quality controlled blend of asbestos and mineral fibers with proprietary binders specifically formulated for thermal insulation in critical industrial applications. Write for complete product information.

CAFCO SOUND-SHIELD "S" — Answering an industry need for a harder, whiter, spray-applied ceiling finish providing predictable acoustical performance, SOUND-SHIELD "S" surpasses the performance characteristics of most spray or trowel applied acoustical ceiling materials. Refer to folders 14d/1s and 12a/1s in 1967 Sweet's Architectural and Industrial Construction Catalog files.



CAFCO BLAZE-SHIELD TYPE "B"

Dust free application direct to cellular deck, beams and columns without adhesive or tamping. Nozzle extension eliminates scaffolding.

Project — IBM Office Building, Philadelphia, Pa.
Architect — Vincent Kling and Associates
General Contractor — Basic Construction, Inc.
CAFCO Contractor — William Armstrong & Sons, Inc., Philadelphia, Pa.

PROMINENT BLAZE-SHIELD INSTALLATIONS

NORTHEAST —

American Cyanamid Building — Wayne, New Jersey
Vincent Kling and Associates
Union Carbide Building — New York City
Skidmore, Owings & Merrill
Liberty Mutual Building — Boston
Perry, Shaw, Hepburn & Dean
Marine Inland Grace Trust Co. Building — New York City
Skidmore, Owings & Merrill
IBM Building — Philadelphia
Vincent Kling & Associates
Gateway Center #4 — Pittsburgh
Harrison & Abramovitz

SOUTH —

Home Security Building — Durham
Small and Boaz
Lone Star Gas Building — Dallas
Thomas & Jameson
First National Bank Building — Orlando
Kemp, Bunch & Jackson
University Towers — El Paso
Garland — Hilles
Allen Towers — New Orleans
Shaw Metz & Associates
Moissant Airport — New Orleans
Goldstein — Parham & Labouisse
230 Peachtree Street — Atlanta
Edwards & Portman

MIDWEST —

United Insurance Building — Chicago
Shaw Metz & Associates
Ohio National Building — Cincinnati
Pattey, Tyler, Martin, Roth
National Cash Register — Chicago
Naess and Murphy
Bell Telephone Building — Davenport
Louis C. Kingscott & Associates
Burroughs Office Building — Detroit
Charles Valentine
Federal Office Building — Cleveland
General Services Administration

WEST —

Fireman's Fund Building — Los Angeles
Heussel & Homolka
American Trust Building — San Francisco
Ashley, Keyser & Runge
Federal Office Building — Juneau
General Services Administration
Lincoln Building — Spokane
Wells Fargo Building — San Francisco
John Graham

USM UNITED STATES MINERAL PRODUCTS COMPANY
Stanhope, New Jersey 07874
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PRINTED IN U.S.A.

UNITED STATES MINERAL PRODUCTS COMPANY

SINCE 1875

STANHOPE, NEW JERSEY 07874

Tel. 347-1200 Area Code 201
Cable: CAFCOINSUL, New York

TECHNICAL BULLETIN C-940

August 12, 1966

USM RESEARCH _ _ _ COLUMN FIREPROOFING
RAIN EXPOSURE AND WEATHERING TEST

A full scale mock-up consisting of two columns a full story high (12 feet) connected by means of a spandrel plate was constructed of wood and covered with hardboard. The mock-up was constructed such that the ground level would be at the same level as the floor level in the actual building; see Figure 1.

The entire assembly was placed outdoors and sprayed with 1" of BLAZE-SHIELD Type D fiber on July 13, 1965; see Figures 2 and 3. Some 16 hours after completion of spraying the assembly was exposed to the erosive effect of impinging water jets, one directed at each column; see Figure 4. The flow from each jet was approximately 3 gallons per minute.

The water jets were kept on for 6 full hours. This amounted to approximately 21 inches of water falling on the assembly, which is much in excess of any rainstorm one would normally experience. This rainfall is greater than a six month rainfall in this area.

The water jets were turned off after 6 hours of exposure and photographs of the assembly were taken. The only place any fiber had come loose from the assembly was on the top portion of the lower spandrel plate; see Figures 5 and 6. This is a direct result of the water collecting on the lower edge of the upper spandrel plate and falling down 8 feet onto the lower spandrel top edge.

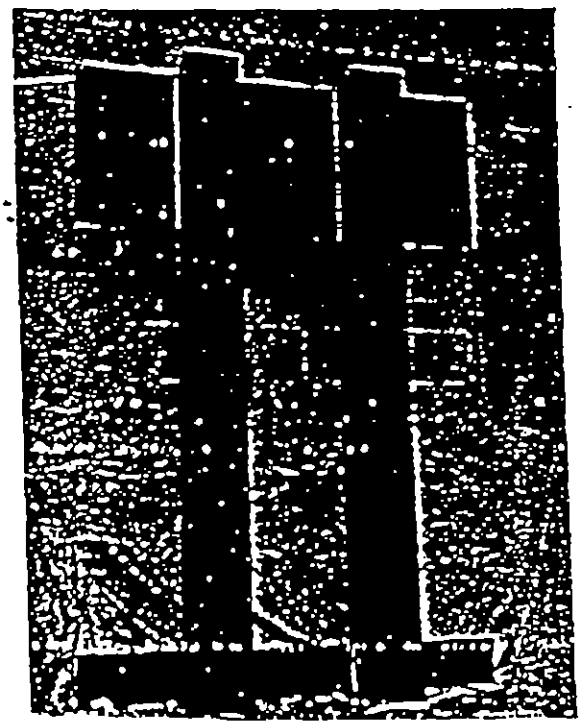

Fig. 1 - Assembly prior to spraying

Fig. 2 - Application of BLAZE-SHIELD

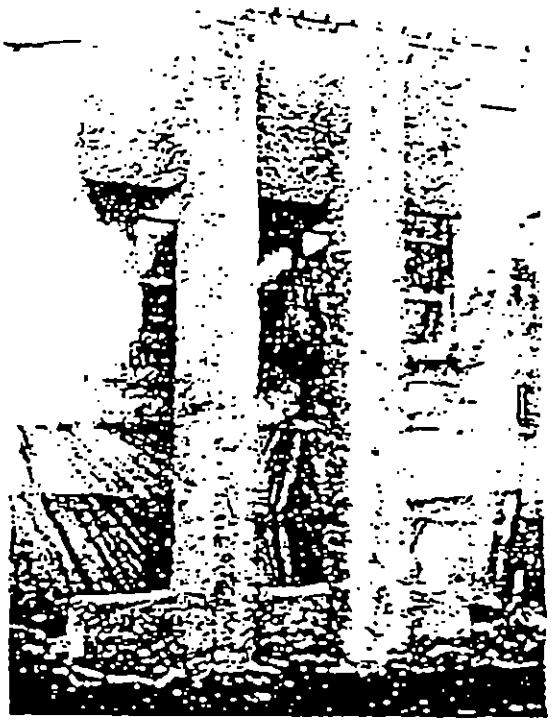

Figure 3
Fireproofed Assembly

Figure 4
Impinging water jets directed at columns

Figure 5
View after 6 hour water exposure
(picture taken from left side)

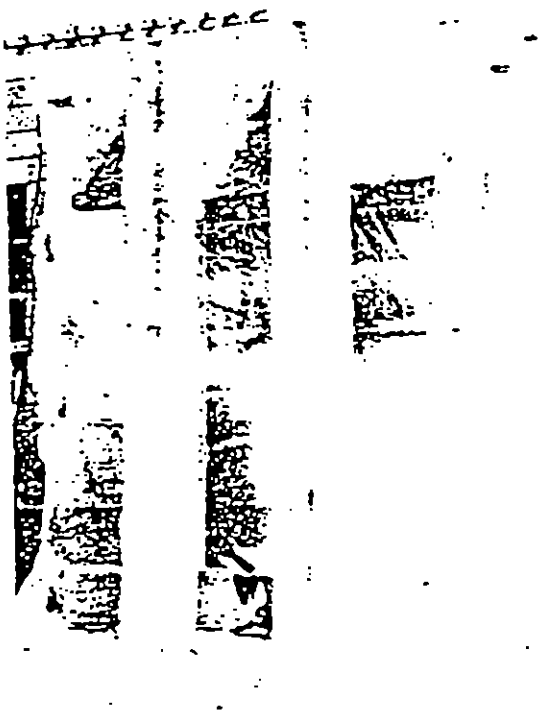

Figure 6
View after 6 hour water exposure
(picture taken from right side)

On July 13, 1966, exactly one year later, the assembly was inspected and photographs taken. During the winter approximately 48 inches of snow had fallen, while from January 1, 1966-18 inches of rain had accumulated. The fiber is in excellent condition, is firm to the touch and has not worn down under the year's exposure to the weather; see Figures 7 and 8.

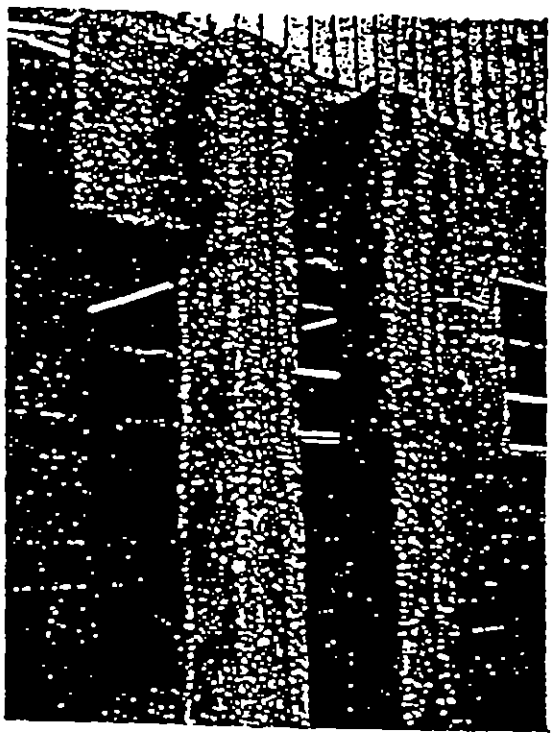

Figure 7
Assembly looking right

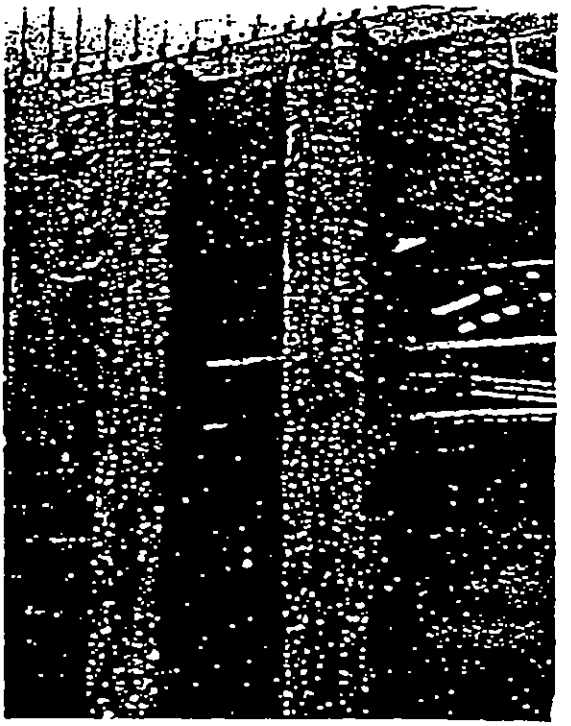

Figure 8
Assembly looking left

Assembly as of July 13, 1966

RESEARCH DEPARTMENT

P. O. BOX 6556
WENCOTE & STE TON AVE. STA.
PHILADELPHIA 38, PA.
WAVERLY 4-4787

International Testing Laboratories, Inc.

Materials Testing and Consulting Engineers

578-582 MARKET STREET
NEWARK, N. J. 07105

MITCHELL 2-4772-3-4

CHICAGO 3, ILLINOIS
WABASH 2-6020
CABLE ADDRESS: INTEL

REPORT OF TEST

No. 297632 DATE Jan. 11, 1966

From United States Mineral Products Company
Stanhope, New Jersey 07874

BOND STRENGTH OF
CAFCO BLAZE-SHIELD TYPE D, UNTAMPED (NO ADHESIVE USED)

Administrative Data

1.0 PURPOSE OF TEST: To determine the bond strength of CAFCO BLAZE-SHIEDL Type I untamped, applied without adhesive on Uncoated, Shop Coate and Galvanized steel.

2.0 MANUFACTURER: U. S. Mineral Products Company, Stanhope, New Jersey

3.0 MANUFACTURER'S TYPE OR MODEL NO.: CAFCO BLAZE-SHIELD Type D applied 3/4" thick untamped to steel (no adhesive used

4.0 DRAWING, SPECIFICATION OR EXHIBIT: ASTM C-297

5.0 QUANTITY OF ITEMS TESTED: Three (3) 6" x 6" steel plates

6.0 SECURITY CLASSIFICATION OF ITEMS: Unclassified

7.0 DATE OF TEST COMPLETION: January 3, 1966

8.0 TEST CONDUCTED BY: International Testing Laboratories, Inc.

9.0 DISPOSITION OF SPECIMENS: Returned to U. S. Mineral Products Co.

10.0 ABSTRACT: The tests was conducted in accordance with the referred specificat and the results are as follows:

Galvanized Steel	:	140 psf
Uncoated Steel	:	120 psf
Shop Coated Steel	:	112 psf
Average value	:	124 psf

To

The liability of the International Testing Laboratories, Inc. with respect to the services charged for herein, shall in no event exceed the amount of the invoice.

Our reports pertain to the sample tested only. Information contained herein is not to be reproduced, except with our permission.

INTERNATIONAL TESTING LABORATORIES, INC.

ITL 122 2500 9-64

P. O. BOX 8666
WALNCOTE & STENTON AVE. STA.
PHILADELPHIA 38, PA.
WAVERLY 4-4701

International Testing Laboratories, Inc.

Materials Testing and Consulting Engineers

578-582 MARKET STREET
NEWARK, N. J., 07105
MITCHELL 2-4772-3-4

407 S. DEARBORN STREET
CHICAGO 5, ILLINOIS
WABASH 2-4600
CABLE ADDRESS: INTEL

REPORT OF TEST

No. 297632 DATE Jan. 11, 1966.

From United States Mineral Products Company
Stanhope, New Jersey

Test Procedure:

The Bond Strength Test was conducted in accordance with ASTM C-297. The Samples submitted consisted of CAFCO BLAZE-SHIELD TYPE D applied 3/4" thick untamped to three (3) 6" x 6" steel plates (no adhesive used) - one Galvanized, one Uncoated and one Shop Coated with paint. A 6" x 6" metal plate with a hook on back was adhered to the sprayed fiber face with epoxy adhesive after the fiber had been air dried to equilibrium.

The sample was place horizontally and the steel plate was pulled from the fiber mat.

Test Results:

The Bond Strength Test was conducted in accordance with the Test procedure of this report and the breaking loads were as follows:

Galvanized Steel	:	35 lbs.
Uncoated Steel	:	30 lbs.
Shop Coated Steel	:	28 lbs.
Average Value	:	31 lbs.

Failure occurred within and near the center of the fiber mass resulting in an Average Bond Strength of 124 psf.

Since the material weighed 0.92 lbs. per square foot (14.8 lbs. per cubic foot) the Average Bond Strength is 152 times the weight of the applied fiber, while the Minimum Bond Strength is 122 times the weight of the applied fiber.

To United States Mineral Products Company
Stanhope, New Jersey

The liability of the International Testing Laboratories, Inc. with respect to the services charged for herein, shall in no event exceed the amount of the invoice.

Our reports pertain to the sample tested only. Information contained herein is not to be reproduced, except with our permission.

INTERNATIONAL TESTING LABORATORIES, INC.

WENCOTE & STENTON AVE. STA.
PHILADELPHIA, PA. 19138
WAYNE 4-4701

International Testing Laboratories, Inc.

Materials Testing and Consulting Engineers

578-582 MARKET STREET
NEWARK, N. J., 07105

PHONE (201) 642-4772-3-4

CHICAGO, ILLINOIS 60605
WABASH 2-4620
CABLE ADDRESS: INTEL

REPORT OF TEST

No. 305385 DATE August 16, 1966

From United States Mineral Products Company
Stanhope, New Jersey 07874

Purchase Order No. B-4307

Summary: Air Erosion of CAFCO BLAZE-SHIELD Type D (untamped) is negligible.

title: Dusting and Flaking Test of CAFCO BLAZE-SHIELD Type D Fiber (untamped).

Procedure: A submitted sample 15/16" thick applied to a 16" x 48" sheet of gypsum lath at a density of 11 pcf was mounted in a duct with the fiber face parallel to the direction of the air stream. A blower with a filter was at one end of the duct and a black cloth collection filter was the terminus or open end. The blower was started and allowed to run for 6 hours to remove dust or flakes loosened by handling. At this time, impinging and issuing velocity were checked with an anemometer.

Impinging velocity: 1040 ft. per minute

Issuing velocity : 270 ft. per minute

After the shakedown, the collector filter was removed, cleaned and replaced. The blower was then started and allowed to run for 24 hours. At the end of this period the collector filter was removed and the collected particles weighed.

Results: At an air impinging velocity of 1040 ft. per minute and an issuing velocity of 270 ft. per minute, the total accumulation on the filter was .0004 g. or .0001 g/sq.ft. of exposed area.

To United States Mineral Products Company
Stanhope, New Jersey

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INTERNATIONAL TESTING LABORATORIES, INC.

David H. Hoffman

C-258

575-60-SM

APPLICANT—Columbia Acoustics and Fireproofing for United States Mineral Wool Company, owner.

APPEARANCES—

For Applicant: Frank M. Stumpf.

ACTION OF BOARD—Material approved in accordance with the report and recommendation of Committee on Test.

THE VOTE—

Affirmative: Chairman Foley, Vice Chairman Kleinert, Commissioner Fox and Commissioner Becker 4

Negative: 0

THE RESOLUTION—

WHEREAS, the report of a Committee on Test reads:

575-60-SM—Columbia Acoustics and Fireproofing for United States Mineral Wool Company filed for approval of the material known as Cafco under the provisions of C26-522.0 Administrative Building Code.

USE: Asbestos fireproofing.

DESCRIPTION: The material is a blend of mineral fibers, asbestos and cementacious binders. This material has been approved by the Board under Calendar Numbers 633-55-SM, 138-58-SM, 139-58-SM and 148-60-SM for various methods of fireproofing structural steel and floor and roof construction.

INSPECTION AND TEST: The material was tested at the Associated Testing Laboratories, Inc., New Jersey in accordance with the requirements of ASTM B-117 (Salt Spray Test—250 Hours).

The test was conducted in the following manner: Six specimens of cold rolled steel were used in the test.

1. No protection; 2. Shop Coat; 3. Shop and Field Coat; 4. No protection plus Cafco; 5. Shop coat plus Cafco; 6. Shop coat and field coat plus Cafco.

Results—various degrees of corrosion on 1, 2, 3, and 4. No rust or corrosion on 5 and 6.

The complete report is on file with and is part of the record.

RECOMMENDATION: The Committee on Test is of the opinion that the material known as Cafco is in itself non-corrosive and therefore the field coat of paint may be omitted as permitted under C26-522.0 Administrative Building Code when Cafco is used to encase structural steel as a means of fireproofing the steel in accordance with approval granted to Cafco.

(Sgd.) WILLIAM A. NOLAN,
Director,
JOHN A. DAVIS,
Asst. Engr.,
GEORGE F. SELLENRICK,
Asst. Engr.,
Committee on Test.

Resolved, that the Board of Standards and Appeals does hereby *approve* this material in accordance with the above report.

A true copy of resolution adopted by the Board of Standards and Appeals March 21, 1961. Printed in Bulletin No. 13, Vol. XLVI.

Copies Sent
To Applicant
Fire Com'r.
Borough Supt.

Chairman.

6-606

Administrative Data

1.0 Purpose of Test: To determine the effect of seven (7) freeze-thaw cycles on CAFCO HEAT-SHIELD applied to corrugated sheet steel.

2.0 Manufacturer: U. S. Mineral Products Company, Stanhope, New Jersey

3.0 Manufacturer's Type or Model No.: CAFCO HEAT-SHIELD

4.0 Drawing, Specification or Exhibit: ASTM C-297

5.0 Quantity of Items Tested: Three (3) 12" x 12" sections of corrugated sheet steel.

6.0 Security Classification of Items: Unclassified

7.0 Date Test Completed: August 4th, 1966

8.0 Test Conducted By: International Testing Laboratories, Inc.

9.0 Disposition of Specimens: Returned to U. S. Mineral Products Company

10.0 Abstract: The tests were conducted in accordance with the referred specification and the results follow:

After seven (7) freeze-thaw cycles the fiber specimens had an average tensile strength of 103 psf.

Report No. 304390 Page 1 Of 2.

Test Procedure: The samples submitted consisted of CaFCO HEAT-SHIELD applied over adhesive and tamped to three (3) 12" x 12" sections of galvanized corrugated sheet steel. A 2" x 8" metal plate with a hook on back was adhered to the sprayed fiber face with epoxy adhesive after the fiber had been air dried to equilibrium.

The samples were given 10%, 20% and 30% moisture contents respectively and placed in polyethylene bags. The samples were then subjected to seven (7) freeze-thaw cycles as follows: 8 hours in a dry ice cabinet at -110° F.; 24 hours at room temperature of 70° F.

After the seventh cycle the samples were removed from the polyethylene bags and allowed to air dry to equilibrium weight. The samples were then placed horizontally and the steel plate was pulled from the fiber mat.

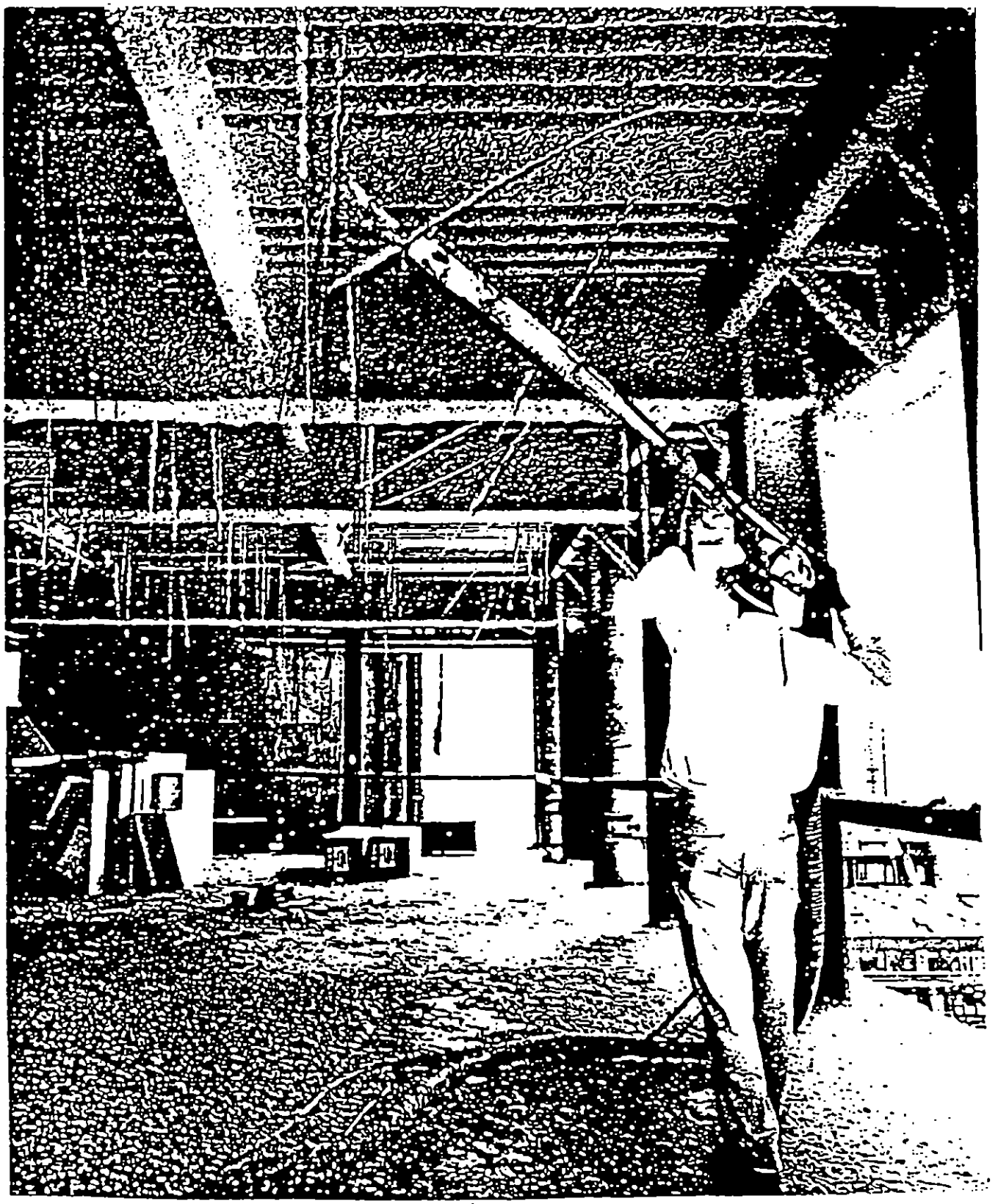
Test Results: The tests were conducted in accordance with the test procedure of this report and the results were as follows:

Sample	Density (pcf)	Average Thickness (inches)	%Moisture	Breaking Load (Lbs.)	Tensile Strength (Psf)
A	12	1.5	10	8	89
B	12	1.375	20	10.5	117
C	11.5	1.375	30	9.25	103

Failure occured within and near the center of the fiber mass, resulting in an average tensile strength of 103 psf.

Since the material weighed an average of 1.42 lbs. per square foot the average tensile strength is 73 times the weight of the applied fiber while the minimum tensile strength was 59 times the weight of the applied fiber.

International Testing Laboratories, Inc.
670-682 MARKET STREET NEWARK 8, NEW JERSEY

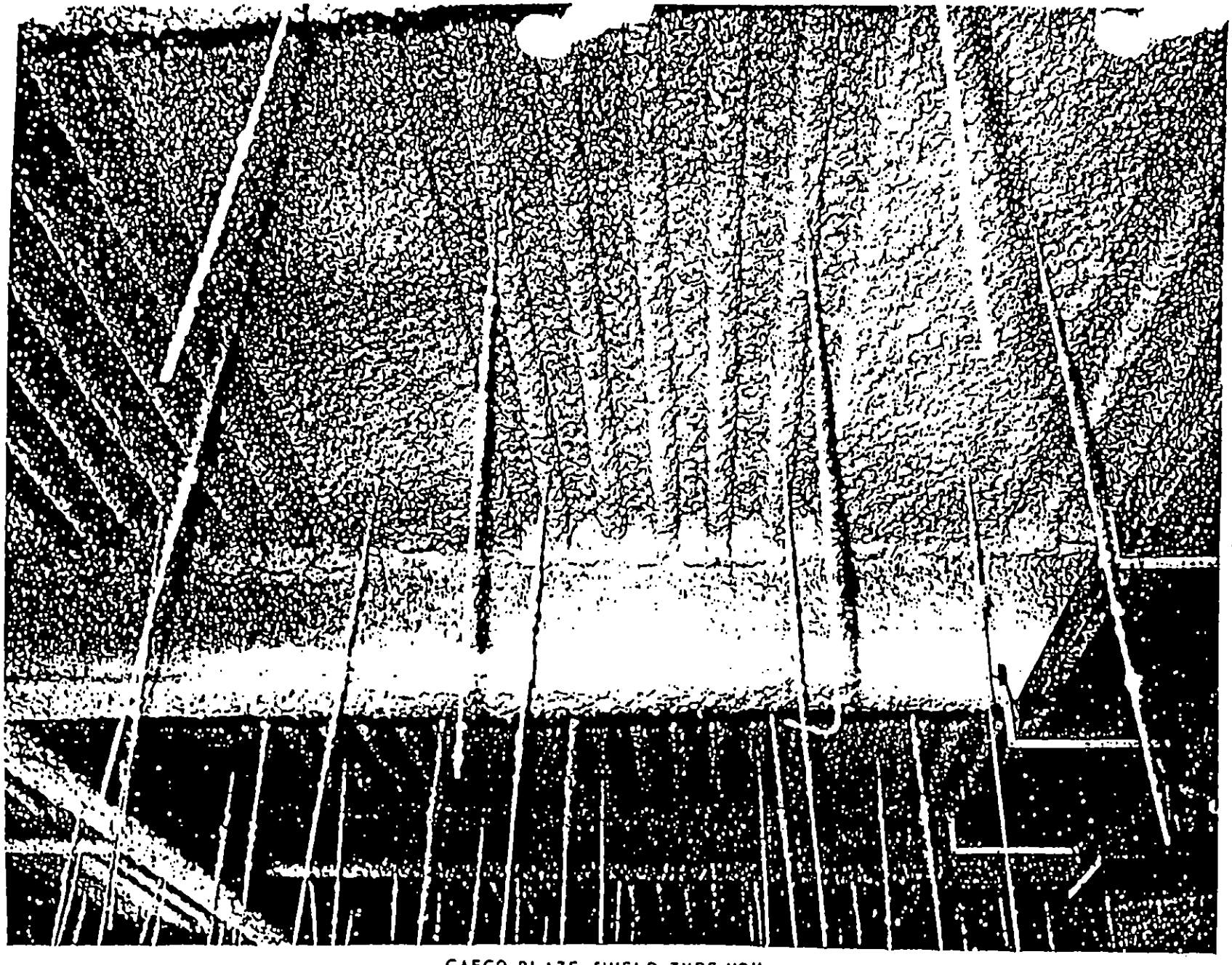


CAFCO BLAZE-SHIELD TYPE "D"

Dust free application direct to cellular deck, beams and columns without adhesive or tamping. Nozzle extension eliminates scaffolding.

Project - IBM Office Building, Philadelphia, Pa
Architect - Vincent Kling and Associates
General Contractor - Basic Construction, Inc.
CAFCO Contractor - William Armstrong & Sons, Inc., Philadelphia, Pa.

UNITED STATES MINERAL WOOL COMPANY



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